






Case Report

Malignant Melanoma Metastasis to the Thyroid Gland Causing Severe Central Airway Obstruction

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Abstract

Metastasis of malignant melanoma to the thyroid gland causing airway obstruction is an extremely rare condition. In an 80-year-old woman who presented with painless swelling of the neck, a diagnosis of malignant melanoma metastasis to the thyroid gland with an unknown source was established. She received multiple radiotherapy sessions that resulted in occasional regression but not complete resolution. She was then referred for tracheal stenting owing to progressed dysphagia and dyspnea. Rigid bronchoscopy was performed, and a fully covered metal stent was placed to secure the open airway. Dyspnea improved immediately after stent insertion. The patient died at her residence because of a cerebrovascular event 2 weeks after the procedure. To the best of our knowledge, central airway obstruction due to malignant melanoma metastasis to the thyroid gland has been not reported in the literature. The approach for palliation of obstruction is similar to that of other malignant central airway obstructions.

KEYWORDS: Airway obstruction, melanoma, neoplasm metastasis, tracheal stenosis

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INTRODUCTION

Malignant central airway obstruction is a life-threatening condition. Although it is mostly caused by primary lung cancer, it can be caused by primary or secondary malignancies adjacent to the airways, such as thyroid, esophageal, and mediastinal tumors [1]. The most common cancers that metastasize to the thyroid gland are renal cell carcinoma, lung cancers, and gastrointestinal tract cancers [2].

Malignant melanoma rarely causes airway obstruction, [3] and we were unable to find any case report on airway obstruction caused by malignant melanoma metastasis to the thyroid gland.

CASE PRESENTATION

An 80-year-old woman presented with painless swelling of the neck. She had no significant medical history, recent illnesses, and contacts with sick individuals. None of her relatives had a history of early death or cancer. She had never smoked, consumed alcohol, or used illicit drugs. She was prescribed sertraline and alprazolam by her psychiatrist long time ago; however, she was not consuming any drugs at the time of referral. Examination showed a mass located at the left side of the neck. An ultrasound showed multiple fatty, centrally calcified, lobulated nodules at C4-5 levels of the left side of the neck on the thyroid gland. The biggest lesion was 35x40 mm. True-cut biopsy was performed, which suggested a possibility of malignant melanoma. An immunohistochemical study was performed for exclusion of lymphoma and metastases of other malignancies.

Immunohistochemical study showed positivity for S100 and negativity for HMB 45, leukocyte common antigen (LCA), and pan-cytokeratin (CK). As LCA and pan-CK results were negative, we ruled out lymphoma and carcinoma metastases. Although results for HMB-45 were negative, S100 positivity, patient's history, and clinical and pathological findings were suggestive of malignant melanoma metastasis. Moreover, the specimen was genetically studied, which revealed p.G593S mutation of *GRAF* compatible with melanoma diagnosis. Whole-body oncologic fluorodeoxyglucose positron emission tomography (Discovery PET/CT 610 scanner, GE Healthcare Systems, Chicago, Illinois, USA) did not show the primary lesion but showed the mass infiltrating the thyroid gland that was detected by the first ultrasound. Imaging revealed that the patient also had scoliosis and hiatal hernia.

The patient denied surgical intervention; thus, chemotherapy with temozolomide was initiated. However, lesion progression was observed after the second course. Subsequently, radiotherapy was initiated, resulting in thyroid lesion size reduction.

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Figure 1. a, b. (a) Axial and (b) sagittal CT images demonstrating tracheal narrowing
CT: computed tomography

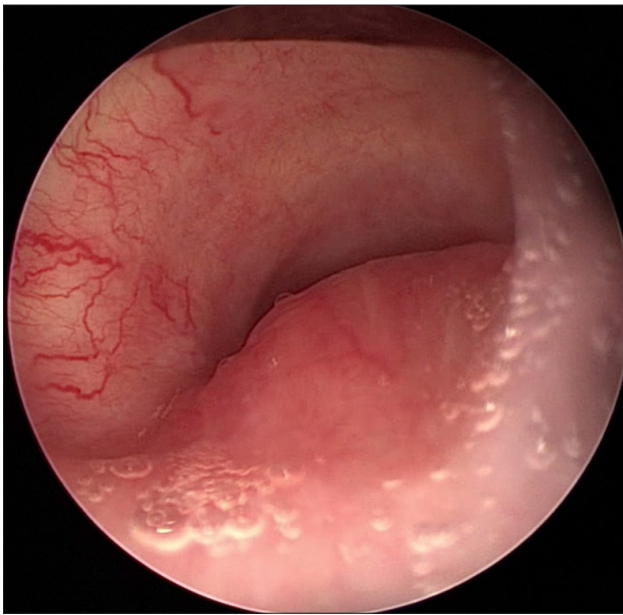


Figure 2. Rigid bronchoscopy revealed nearly total obstruction of the trachea

MAIN POINTS

- Malignant melanoma can rarely metastasize to thyroid gland and very rarely cause airway obstruction which presents with severe dyspnea.
- Palliative approach to overcome malignant airway obstruction is the same for other causes.
- Stenting of trachea via rigid bronchoscopy may provide palliative relief for endoluminal malign airway obstruction.

Radiotherapy was repeated owing to a new retrosternal lesion seen on a control PET-computed tomography (CT) scan obtained 1 year after the first radiotherapy. After the second radiotherapy, whole-body PET-CT was performed, revealing a partial reduction in the size of the thyroid lesion and near-complete regression of the retrosternal lesion. The patient was then discharged with scheduled routine follow-ups. One year later, follow-up magnetic resonance imaging and PET-CT showed thyroid lesion progression.

The patient was referred to our institution for tracheal stenting owing to progression of the mass that compressed the esophagus, pharynx, and trachea, as documented by thoracic CT (Figure 1a, b). She complained of difficulty in swallowing of both liquids and solids and difficulty in breathing. She had dyspnea and stridor. Thus, she was administered salbutamol, ipratropium bromide, budesonide, piperacillin/tazobactam, and potassium (in isotonic fluid) treatments and parenteral nutrition.

Upper endoscopy for dysphagia was performed by a gastroenterology, and a percutaneous endoscopic gastrostomy (PEG) tube was inserted.

Rigid bronchoscopy was performed under general anesthesia. It revealed near-total obstruction of the trachea from posterolateral external compression and accompanying mucosal invasion starting 1 cm below the vocal cords and reaching the level of carina (Figure 2). Tissue samples were obtained during the core-out of lesion. After dilation and core-out by a rigid scope, an 18×80-mm, covered metal stent was placed (Figure 3).

Tracheal biopsy showed spindle cell mesenchymal proliferation with negative staining for S100 and HMB-45. Mitosis was observed throughout the tumor, and some cells showed atypical mitosis (Figure 4a, b). Ki-67 proliferation index was 19% (Figure 5).

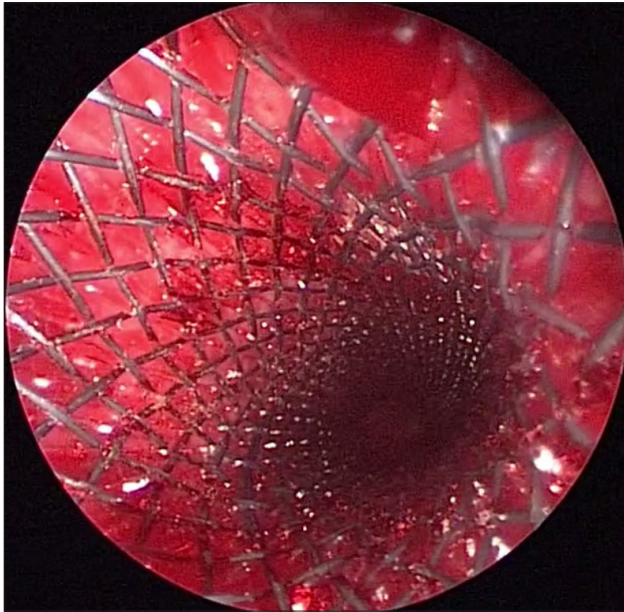


Figure 3. After insertion of the covered metallic stent, the tracheal lumen reached the optimal diameter

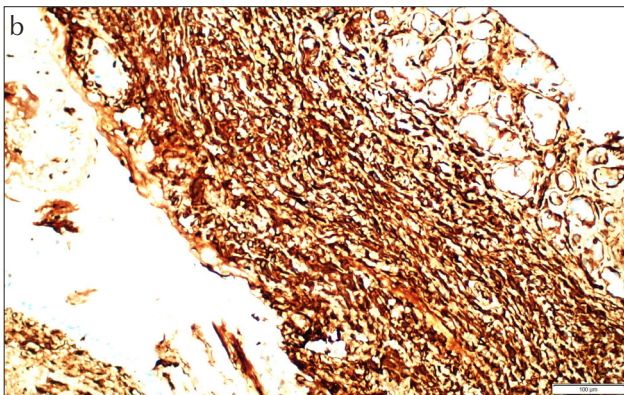
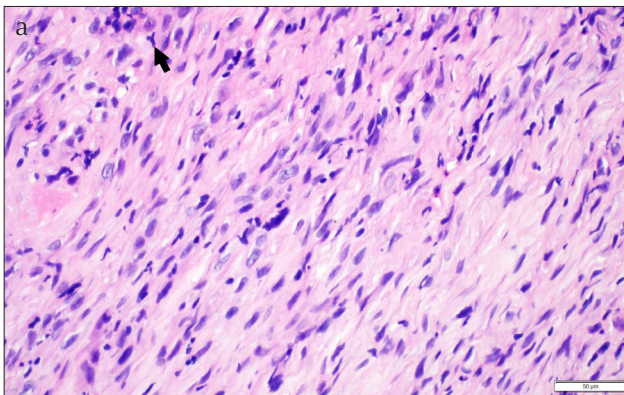


Figure 4. a, b. Staining of biopsy samples by H&E stain (a) shows atypical spindle cell proliferation with minimal lymphoid cells and eosinophils in the stroma. Some cells exhibit atypical mitosis (arrowhead) (x200). Vimentin staining (b) was diffusely positive (x100) H&E: hematoxylin and eosin

Malignant melanomas may rarely be negative for S100 and HMB-45 staining, [4] and in such cases, one should rule out other tumors. Other immunohistochemical stains such as MITF and SOX10 may help identify these tumors. Although results for these stains were also negative in our case,

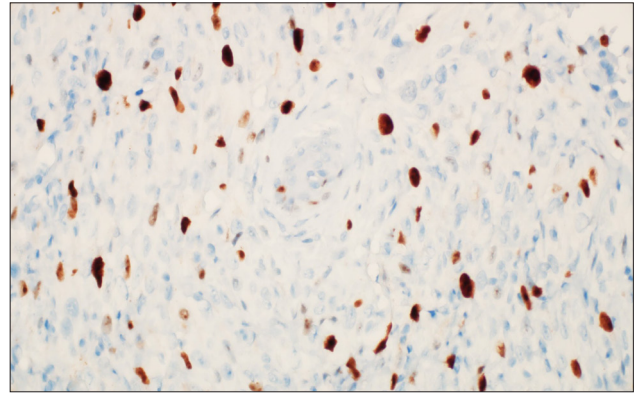


Figure 5. Ki-67 proliferation indices (x200)

patient's history, genetic findings, and S100 positivity in previous tumor biopsy still suggested malignant melanoma metastasis.

Postoperative chest X-ray was obtained. Levothyroxine was prescribed to the patient owing to her subclinical hypothyroidism, and a PEG diet was arranged. The patient was discharged after her breathing symptoms subsided. An oral informed consent was obtained from the patient for case presentation, prior to her discharge.

Two weeks after the procedure, she suddenly died at her residence because of a cerebrovascular event.

DISCUSSION

As metastatic and pulmonary malignancies are associated with high mortality rates, a curative approach is seldom accomplishable; consequently, palliative management of airway obstruction is the main approach. However, progressive airway obstruction caused by malignant lesions can be lethal, and proper management can be a life-saving intervention. In addition, in some cases, even with advanced malignancies, bronchoscopic intervention can have an effect on long-term survival [5].

Malignant airway obstruction can present with dyspnea, hemoptysis, postobstructive infections, and asphyxiation. It can be classified as extraluminal (extrinsic), endoluminal (intrinsic), or mixed (combined intrinsic and extrinsic) type [1].

For endoluminal lesions, methods such as thermal coagulation, argon plasma laser, neodymium-doped yttrium aluminum garnet laser, cryotherapy, mechanical debulking, brachytherapy, and photodynamic therapy can be used. For extraluminal lesions, stenting can overcome external pressure and sustain airway permanence. These methods might not be curative but can provide palliative relief to patients until a more curative method, such as surgical resection, can be tried [6].

Our patient had mixed obstruction. Thus, the standard approach of stenting via rigid bronchoscopy provided palliative relief. Her stridor disappeared immediately after the procedure, and she had no complaint of dyspnea.

Airway obstruction is rarely caused by malignant melanoma metastasis. Although there are case reports of melanoma metastasis to bronchi and the trachea causing obstruction, [7, 8] we were unable to find case reports of malignant melanoma metastasis to the thyroid gland that compressed the trachea, causing obstruction. To the best of our knowledge, this is the first report documenting malignant melanoma metastasis to the thyroid gland causing central airway obstruction.

Informed Consent: Verbal informed consent was obtained from patient who participated in this case.

Peer-review: Externally peer-reviewed.

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